

**DEPARTMENT OF TRANSPORTATION
STATE OF GEORGIA**

INTERDEPARTMENT CORRESPONDENCE

FILE: EDS-441(12), (13) Telfair Wheeler
BR-0001-00(220) Telfair Wheeler
P.I. Nos. 531100, 561470, & 0001220
McRae Bypass

OFFICE: Engineering Services

DATE: July 13, 2007


FROM: Brian K. Summers, PE, Project Review Engineer

TO: Babs Abubakari, P.E., State Consultant Design and Program Delivery Engineer

SUBJECT: IMPLEMENTATION OF VALUE ENGINEERING STUDY ALTERNATIVES

Recommendations for implementation of Value Engineering Study Alternatives are indicated in the table below. Incorporate the VE alternatives recommended for implementation to the extent reasonable in the design of the project.

ALT #	Description	Potential Savings/LCC	Implement	Comments
ALIGNMENT				
A-1	Relocate alignment approximately 2,220 feet west at the intersection with U.S. 341	Design Suggestion	No	Would result in additional Right of Way impacts to residential/commercial properties.
A-2	Shift alignment east at the Little Ocmulgee River Crossing	Design Suggestion	No	Would require an Environmental Reevaluation.
A-4	Shift alignment beginning at the south end to follow Willow Creek Lane, tying back near Spring Avenue	Design Suggestion	No	Would require an Environmental Reevaluation and would result in residential displacements.
A-7	Lower mainline profile at Sugar Creek Bridge (Sta. 221+45 to Sta. 250+50)	\$355,325	Yes	This should be done.

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ALT #	Description	Potential Savings/LCC	Implement	Comments
ALIGNMENT				
A-9	Lower the mainline profile in the vicinity of Spring Avenue (Sta. 311+75 to Sta. 338+00)	\$240,792	Yes	This should be done.
A-12	Lower mainline profile over Norfolk Southern Railway (Sta. 275+00 to Sta. 303+00)	\$1,497,522	Yes	This should be done.
MAINTAIN ACCESS				
MA-2	Relocate S.R. 149/CR 152 opposite the U.S. 441/BUS 441 intersection	\$708,720 (cost increase)	No	This would require additional Right of Way, pavement, and earthwork. The spacing between the two intersections is approximately 1600 ft.
MA-4	Shift mainline east and retain CR 236 between Sta. 160+00 and Sta. 195+00 and delete CR 236 (W) connection	Design Suggestion	No	Would result in significantly more earthwork due to a deep ravine east of the proposed alignment.
MA-12	Line up State Park entrance and CR 133	Design Suggestion	Yes	This should be done.
TYPICAL SECTION				
TS-2	Construct 2-lane bypass with Right of Way for 4-lanes	\$18,231,214	No	Does not satisfy the intent of the GRIP System.
TS-3	Use 11 feet lanes on all mainline sections	\$675,072	No	Due to the Design Speed and traffic counts, AASHTO recommends the travel way be at least 24 ft. for new alignments.

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ALT #	Description	Potential Savings/LCC	Implement	Comments
TYPICAL SECTION - continued				
TS-5	Reduce median width to 20 feet and include Cable Median Barrier	\$1,136,856	No	Would introduce additional maintenance costs associated with the Cable Median Barrier System.
TS-8	Reduce lane width on side streets	Prop. savings \$103,783 Actual savings \$66,000	Yes	Lane widths will be reduced on S.R. 149, CR 152, and CR 236
TS-10	Use 4:1 median slopes where possible	\$142,432	No	6:1 slopes are preferred on median slopes on the GRIP System.
STRUCTURES				
S-1	Use shorter spans for Little Ocmulgee River Bridge and prestressed concrete pile intermediate bents	\$961,552	No	The profile grade would have to be lowered since the bents would be too tall to use pile intermediate bents.
S-2	Relocate drainage pipe at Sta. 346+00 to avoid bridge end bent	Design Suggestion	Yes	This should be done.
S-3	Use pile intermediate bents at bents 2, 3, and 4 at the Little Ocmulgee Bridge	\$183,475	No	Current bridge design standards state that spans longer than 50 ft. cannot have pile intermediate bents.
S-4	Use shorter spans and pile intermediate bents in lieu of concrete intermediate bents at the Sugar Creek Bridge	\$587,207	No	Would result in many more spans which is not preferred by the Bridge Office.
CONSTRUCTABILITY				
C-1	Retain existing profile grade at south project tie-in	\$65,693	Yes	This should be done.

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ALT #	Description	Potential Savings/LCC	Implement	Comments
CONSTRUCTABILITY - continued				
C-2	Reduce the Right of Way miter at Sta. 145+00	\$21,001	Yes	This should be done.
C-6	Reduce the profile grade north of the Heart of Georgia RR and the amount of full depth reconstruction at the north tie in (Sta. 382+00 to Sta. 413+00)	Proposed \$171,992 Actual savings \$25,873	Yes	The grades will stay the same but the full depth construction will now end at Sta. 407+00±.
PLAN CHECK ITEMS				
ALT #	Description			Comments
P-1	Check the airway/highway clearance requirements at the north end of the North McRae Bypass.			This will be done.
P-2	Profiles at the intersection of the north/south project meet at a PVIC (algebraic difference of 3.14%) without a vertical curve.			This will be corrected at some time in the future when the final plans are prepared.
P-3	Profile elevation information is in error on the Plan Sheets from Sta. 360+00 to Sta. 375+00.			This will be done.
P-4	Reconcile payment for In-Place-Embankment on the North and South McRae projects.			This will be done.
P-5	The North McRae project's Asphaltic Concrete Leveling quantities appear to be missing.			The quantities will be included in the final plans.

A meeting was held on July 11, 2007 and Mike Haithcock, David Norwood, and Karyn Matthews of Consultant Design, and Brian Summers, Ron Wishon and Lisa Myers of Engineering Services were in attendance.

The results above reflect the consensus of those in attendance and those who provided input.

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Approved:  Date: 7/23/07
David E. Studstill, Jr., P. E., Chief Engineer

BKS/REW

Attachments

c: Gus Shanine, FHWA
Todd Long
David Norwood
Karyn Matthews
Jack Muirhead
Philip P. Alimia
James Magnus
Brad Saxon
Nabil M. Raad
Lisa Myers

Wishon, Ron

From: Myers, Lisa
Sent: Monday, July 09, 2007 6:54 AM
To: Wishon, Ron
Subject: FW: McRae Bypass VE responses

Another one to schedule.

Lisa Myers

Design Review Engineer Manager/VE Coordinator

*GA DOT - Engineering Services
#2 Capitol Square Room 266
Atlanta, GA 30334*

404-651-7468

From: Matthews, Karyn
Sent: Friday, July 06, 2007 4:21 PM
To: Myers, Lisa
Subject: McRae Bypass VE responses

Below are our responses to the VE study recommendations for the McRae Bypass projects -EDS-441(12),(13) & BR-0001-00(220).

- A-1, Relocate alignment approximately 2200 ft west at the intersection with US-341. This design suggestion would have more impacts to property in the city of McRae. The current alignment avoids displacing businesses and homes.
- A-2, Shift alignment east at the Little Ocmulgee River Crossing. Because we have an approved environmental document for our current alignment, it would be in the best interest of the project to move forward.
- A-4, Shift alignment beginning at the south end to follow Willow Creek Lane, tying back in near Spring Avenue. Because we have an approved environmental document for our current alignment, it would be in the best interest of the project to move forward.
- A-7, Lower mainline profile at Sugar Creek Bridge approximately six feet. WILL DO
- A-9, Lower the mainline profile in the vicinity of Spring Ave. (STA 311+75 to 338+00). WILL DO
- A-12, Lower the Mainline profile over the Norfolk Southern Railroad (STA 275+00 to 303+00). WILL DO
- MA2, Relocate CR-152/SR-149 opposite the US-441/Business-441 intersection. This would require additional right-of-way, additional pavement and earthwork. The traffic volume is low, and the two intersections are currently spaced 1595' apart. Therefore, we will not implement this suggestion.
- MA4, Shift mainline east and retain CR-236 between Station 160+00 to 195+00 and delete CR-236(W) connection. There is a deep ravine east of the proposed roadway which prohibits this shift.
- MA 12, Line up state park entrance and CR 133. WILL DO (if cleared environmentally)
- TS-1, Construct 2-lane bypass with right-of-way for 4 lanes. US 441 will be a 4-lane roadway from the Tennessee state line to the Florida state line within the state of Georgia. The GRIP system will ensure that 98% of all areas within the state will be within 20 miles of a four-lane road. A two-lane roadway does not meet the GRIP definition.
- TS-3, Use 11-ft lanes on all mainline sections. According to AASHTO, at a design speed of greater than 60 mph and more than 1500 veh/day, the traveled way should be at least 24-ft for new alignments. It also states that the extra cost of providing a 12-ft lane width is offset to some extent by a reduction in the cost of shoulder maintenance and reduction in surface maintenance due to lessened wheel concentrations at the pavement. Therefore, we will use 12-ft lanes.

- **TS-5, Reduce median width to 20-ft (with cable barrier).** We do not want to add an obstruction to the median of the roadway (cable barrier) in this rural setting.
- **TS-8, Reduce lane width on side streets.** The VE recommendation stated that the purpose of reducing the lane width on side streets was to match existing. However, some side roads already have 24' or more pavement. US 441/US 319/SR 31, Correction Facility Road, Spring Avenue to the south, CR 132 and CR 133 do not have less than 12' lanes existing, therefore the tie-in will remain 2-12' lanes. The ramp to US 280 is new construction to a state route, this will stay 2-12' lanes. We can reduce the lane width on SR 149, CR 152, and CR 236 West and East to 11-feet.
- **TS-10, USE 4:1 Median slopes where possible.** 6:1 slopes are safer and easier to maintain and are the preferred typical section for GRIP roadways.
- **S-1, Use shorter spans for Little Ocmulgee River bridge and prestressed concrete pile intermediate bents.** The grade would have to be lowered since the bents now are too tall to use pile intermediate bents. However, we only have 1.67 ft of clearance over the 100 year flood stage elevations and we are required to have at least 1.0 ft of clearance. If the grade is lowered, this requirement will not be met. Therefore, we will not implement this recommendation.
- **S-2: Relocate drainage pipe at STA 346+00 to avoid bridge end bent.** WILL DO
- **S-3, Use pile intermediate bents at bents 2, 3, and 4 at the Little Ocmulgee Bridge using current span arrangements.** As stated in the current design memos, spans longer than 50 ft cannot use pile intermediate bents. Spans 2, 3, and 4 are 62 ft long. Therefore we will not implement this recommendation.
- **S-4 , Use shorter spans and pile intermediate bents in lieu of concrete intermediate bents at the Sugar Creek Bridge.** The spans would change from 7 @ 115 ft using 63" Bulb Tee's to 16 @ 50 ft using Type II PSC beams (2'4" deep). The bridge office has specified that we should not choose 15 pile intermediate bents with shallower beams over 6 concrete intermediate bents with deeper beams.
- **C-1: Retain existing profile grade at south project tie-in.** WILL DO
- **C-2: Reduce the right-of-way miter at STA 145+00.** WILL DO
- **C-6: Reduce the profile grade north of the Heart of Georgia RR and the amount of full depth reconstruction at the north end tie-in (STA 382+00 to STA 413+00).** To avoid changing the vertical curve over the RR bridge as well as over the US 280 bridge(which ends at STA 383+86.54), the adjustment should be made after this VC. Also it is not feasible to move the end of full depth construction back to 397+00 even with the alteration to the alignment. Instead, will move the end full depth construction back to 407+00 or 408+00.
- **PLAN CHECK ITEMS:**
- **P-1: Check the airway-highway clearance requirements at the north end of the North McRae Bypass.** Plans will be sent to intermodal office for review.
- **P-2: Profiles at the intersection of the north/south project meet at a PVIC (algebraic difference of 3.14%) without a vertical curve.** This is the intersection of US 441 and US23/US 341/SR 27. There will be a traffic signal at this location. Break over of less than 4% is allowed.
- **P-3: Profile elevation information are in error on the Plan Sheets from STA 360+00 – 375+00.** This has been corrected.
- **P-4: Reconcile payment for in-place embankment on the North and South McRae projects.** This will be re-evaluated.
- **P-5: The North McRae's asphalt leveling quantities appear to be missing.** The quantity sheets are not complete as these are preliminary plans.

Please let me know if you have any questions. Thanks,

Karyn M. Matthews, P.E.

Assistant Design Group Manager

GDOT Office of Consultant Design

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